AMENDMENTS TO THE CLAIMS

1 (currently amended) A computer aided design system comprising:

a point sequence information extraction device which extracts a plurality of point sequences on a curved surface;

a dividing device which generates a curved surface from said point sequences using another computer aided design system, and divides said curved surface into a <u>mesh having a</u> predetermined number of <u>mesh points</u>~~meshes~~;

a first fundamental form computing device for computing coefficients of a~~the~~ first fundamental form <u>at a mesh point of said mesh, said coefficients of the first fundamental form being</u> defined <u>at said mesh point</u> by a <u>first</u> tangent vector <u>and a second tangent vector</u> which <u>define</u>~~forms~~ a tangent plane of said mesh <u>at said mesh point</u>;

a second fundamental form computing device for computing coefficients of a~~the~~ second fundamental form <u>at said mesh point, said coefficients of the second fundamental form being</u> defined <u>at said mesh point</u> by a ~~said~~ tangent vector <u>in said tangent plane at said mesh point</u> and a normal vector of said mesh <u>at said mesh point</u>; and

a memory device which stores said point sequence information, said coefficients of the first fundamental form and said coefficients of the second fundamental form.

2 (currently amended) <u>Said</u>~~A~~ computer aided design system according to claim 1<u>,</u> further comprising:

a principal curvature computing device which computes a principal curvature of said mesh <u>point</u> based on said coefficients of the first fundamental form and <u>said</u> coefficients of the second fundamental form;

a line of curvature computing device which computes a line of curvature showing a principal direction of said mesh based on said principal curvature;

a feature point/feature line analyzing device which extracts a point or a line which <u>becomes</u>~~become~~ a reference point or a reference line<u>, respectively,</u> of <u>a</u> transformation defined by changing patterns of one or more feature quantities among five feature quantities showing

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features of said curved surface, said five feature quantities comprising a Gaussian curvature and a mean curvature computed based on said principal curvature, said principal direction, said line of curvature, and said coefficients of the first fundamental form and said coefficients of the second fundamental form; and

a girth length computing device which computes a girth length based on a curvature computed from said coefficients of the first fundamental form and said coefficients of the second fundamental form.

3 (currently amended) SaidA computer aided design system according to claim 2, further comprising:

a reproducing device which transforms said line of curvature for said girth length in said line of curvature direction, with said feature point or saidfeature line as saida transformation reference point or reference line, respectively, and reproduces a shape of said mesh or said curved surface.

4 (currently amended) SaidA computer aided design system according to claim 3, further comprising:

a converting device which extracts a plurality of point sequences on a curved surface from said reproduced shape of said mesh or said curved surface, and converts said point sequences according to a graphical representation algorithm in another computer aided design system.

5 (currently amended) A computer aided design program stored in a computer-readable recording medium for causingexecuting on a computer to execute:

a point sequence information extraction process for extracting a plurality of point sequences on a curved surface;

a dividing process for generating a curved surface from thesaid point sequences using another computer aided design system, and dividing thesaid curved surface into a mesh having a predetermined number of mesh pointsmeshes;

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a first fundamental form computing process for computing coefficients of <u>a</u>~~the~~ first fundamental form <u>at a mesh point of the mesh, the coefficients of the first fundamental form being</u> defined <u>at the mesh point</u> by a <u>first</u> tangent vector <u>and a second tangent vector</u> which <u>define</u>~~forms~~ a tangent plane of <u>the</u>~~said~~ mesh <u>at the mesh point</u>;

a second fundamental form computing process for computing coefficients of <u>a</u>~~the~~ second fundamental form <u>at a mesh point of the mesh, the coefficients of the second fundamental form being</u> defined <u>at the mesh point</u> by a~~said~~ tangent vector <u>in the tangent plane at the mesh point</u> and a normal vector of <u>the</u>~~said~~ mesh <u>at the mesh point</u>; and

a storage process for storing <u>the</u>~~said~~ point sequence information, <u>the</u>~~said~~ coefficients of the first fundamental form and <u>the</u>~~said~~ coefficients of the second fundamental form.

6 (currently amended)   <u>Said</u>~~A~~ computer aided design program <u>stored in a computer-readable recording medium</u> according to claim 5<u>,</u> for further <u>causing</u>~~executing on~~ a computer <u>to execute</u>:

a principal curvature computing process for computing a principal curvature of <u>the</u>~~said~~ mesh based on <u>the</u>~~said~~ coefficients of the first fundamental form and <u>the</u> coefficients of the second fundamental form;

a line of curvature computing process for computing a line of curvature showing a principal direction of <u>the</u>~~said~~ mesh based on <u>the</u>~~said~~ principal curvature;

a feature point/feature line analyzing process for extracting a point or a line which <u>becomes</u>~~become~~ a reference point or a reference line<u>, respectively,</u> of <u>a</u> transformation defined by changing patterns of one or more feature quantities among five feature quantities showing features of said curved surface<u>, the five feature quantities</u> comprising a Gaussian curvature and a mean curvature computed based on said principal curvature, said principal direction, said line of curvature, and said coefficients of the first fundamental form and coefficients of the second fundamental form; and

a girth length computing process for computing a girth length based on a curvature computed from <u>the</u>~~said~~ coefficients of the first fundamental form and <u>the</u> coefficients of the second fundamental form.

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7 (currently amended)   ~~Said~~A computer aided design program _stored in a computer-readable recording medium_ according to claim 6, for further ~~causing~~executing on a computer _to execute~~.~~_

a reproducing process for transforming the~~said~~ line of curvature for the~~said~~ girth length in the~~said~~ line of curvature direction, with said ~~feature~~ point or said~~feature~~ line as said~~.~~ transformation reference _point or reference line, respectively_, and reproducing _a shape of_ said mesh or said curved surface.

8 (currently amended)   ~~Said~~A computer aided design program _stored in a computer-readable recording medium_ according to claim 7, for further ~~causing~~executing on a computer _to execute~~:~~_

a converting process for extracting a plurality of point sequences on a curved surface from the~~said~~ reproduced _shape of the_ mesh or _the_ curved surface, and converting the~~said~~ point sequences according to a graphical representation algorithm in another computer aided design system.

9 (currently amended)   A computer graphics system comprising:

a point sequence information extraction device which extracts a plurality of point sequences on a curved surface;

a dividing device which generates a curved surface from said point sequences using another computer graphics system, and divides said curved surface into a _mesh having a_ predetermined number of _mesh points_~~meshes~~;

a first fundamental form computing device for computing coefficients of a~~the~~ first fundamental form _at a mesh point of said mesh, said coefficients of the first fundamental form being_ defined _at said mesh point_ by a _first_ tangent vector _and a second tangent vector_ which define~~forms~~ a tangent plane of said mesh _at said mesh point_;

a second fundamental form computing device for computing coefficients of a~~the~~ second fundamental form _at said mesh point, said coefficients of the second fundamental form being_

defined <u>at said mesh point</u> by a<s>said</s> tangent vector <u>in said tangent plane at said mesh point</u> and a normal vector of said mesh <u>at said mesh point</u>; and

a memory device which stores said point sequence information, said coefficients of the first fundamental form and said coefficients of the second fundamental form.

10 (currently amended)   A computer graphics program <u>stored in a computer-readable recording medium</u> for <u>causing</u><s>executing on</s> a computer <u>to execute</u>:

a point sequence information extraction process for extracting a plurality of point sequences on a curved surface;

a dividing process for generating a curved surface from <u>the</u><s>said</s> point sequences using another computer graphics system, and dividing <u>the</u><s>said</s> curved surface into a <u>mesh having a</u> predetermined number of <u>mesh points</u><s>meshes</s>;

a first fundamental form computing process for computing coefficients of a<u>the</u> first fundamental form <u>at a mesh point of the mesh, the coefficients of the first fundamental form being</u> defined <u>at the mesh point</u> by a <u>first</u> tangent vector <u>and a second tangent vector</u> which <u>define</u><s>forms</s> a tangent plane of <u>the</u><s>said</s> mesh <u>at the mesh point</u>;

a second fundamental form computing process for computing coefficients of a<u>the</u> second fundamental form <u>at the mesh point, the coefficients of the second fundamental form being</u> defined <u>at the mesh point</u> by a<s>said</s> tangent vector <u>in the tangent plane at the mesh point</u> and a normal vector of <u>the</u><s>said</s> mesh <u>at the mesh point</u>; and

a storage process for storing <u>the</u><s>said</s> point sequence information, <u>the</u><s>said</s> coefficients of the first fundamental form and <u>the</u><s>said</s> coefficients of the second fundamental form.